WHAT IS CLAIMED IS:

1. A polypeptide capable of modulating the autoimmune response of an individual to acetylcholine receptor, said polypeptide being selected from the group consisting of:

(i) a polypeptide consisting of the amino acid sequence of SEQ ID NO:6;

(ii) a polypeptide consisting of the amino acid sequence of SEQ ID NO:8;

(iii) a polypeptide corresponding to amino acid residues 1-121 of SEQ ID NO:2;

(iv) a polypeptide corresponding to amino acid residues 1-146 of SEQ ID NO:6;

(v) a polypeptide corresponding to amino acid residues 122-210 of SEQ ID NO:2;

(vi) a polypeptide as in (i) to (v) or the polypeptide Hα1-210 of SEQ ID NO:2 in which one or more amino acid residues have been added, deleted or substituted by other amino acid residues in a manner that the resulting polypeptide is capable of suppressing experimental myasthenia gravis in animal models;

(vii) a fragment of a polypeptide as in (i) to (vi), which fragment is capable of suppressing experimental myasthenia gravis in animal models;

(viii) a polypeptide comprising two or more fragments as in (vii) fused together with or without a spacer;

(ix) a polypeptide, or a fragment as defined in (i)-(viii), or the polypeptide Hα1-210 of SEQ ID NO:2, fused to an additional polypeptide at its N- and/or C-termini; and

(x) soluble forms, denatured forms, chemical derivatives and salts of a polypeptide or a fragment as defined in (i)-(ix).

2. A polypeptide according to claim 1, wherein said polypeptide consists of the amino acid sequence of SEQ ID NO:6.

3. A polypeptide according to claim 1, wherein said polypeptide consists of the amino acid sequence of SEQ ID NO:8.

4. A polypeptide according to claim 1, corresponding to amino acid residues 1-121 of SEQ ID NO:2.

5. A polypeptide according to claim 1, corresponding to amino acid residues 1-146 of SEQ ID NO:6.

6. A polypeptide according to claim 1, corresponding to amino acid residues 122-210 of SEQ ID NO:2.

7. A polypeptide according to claim 1, wherein an additional polypeptide, which is glutathione S-transferase (GST), is fused to said polypeptide or fragment thereof at the N-terminus of said polypeptide or fragment thereof.

8. A DNA molecule coding for the polypeptide according to claim 1.

9. A DNA molecule according to claim 8, being selected from the group consisting of:

(i) a DNA molecule comprising the nucleotide sequence of SEQ ID NO:5;

(ii) a DNA molecule comprising the nucleotide sequence of SEQ ID NO:7;

(iii) a DNA molecule comprising the nucleotide corresponding to nucleotides 1 to 363 of SEQ ID NO:1;

(iv) a DNA molecule comprising the nucleotide sequence corresponding nucleotides 1 to 438 of SEQ ID NO:5;

(v) a DNA molecule comprising the nucleotide sequence of nucleotides 364 to 630 of SEQ ID NO:1;

(vi) DNA molecules which are degenerate, as a result of the genetic code, to the DNA sequences of (i) to (v) and which code for a polypeptide coded for by any one of the DNA sequences of (i) to (v);

(vii) a DNA molecule having a coding nucleotide sequence which is at least 70% homologous to any one of the DNA sequences of (i) to (vi) or to the DNA sequence, SEQ ID NO:1, coding for Hα1-210;

(viii) a DNA molecule as in (i) to (v) or the DNA molecule coding for the amino acid sequence SEQ ID NO:2 of

Hα1-210, in which one or more codons has been added, replaced or deleted in a manner that the polypeptide coded for by said sequence is capable of suppressing experimental myasthenia gravis in animal models;

(ix) a fragment of a DNA molecule as in (i)-(viii) which codes for a polypeptide capable of suppressing experimental myasthenia gravis in animal models;

(x) a DNA molecule comprising two or more fragments of (ix) fused together with or without a spacer, and which codes for a polypeptide capable of suppressing experimental myasthenia gravis in animal models; and

(xi) a DNA molecule comprising a nucleic acid sequence as defined in (i)-(x) or the DNA sequence, SEQ ID NO:1, coding for Hα1-210, fused to additional coding DNA sequences at its 3′ and/or 5′ end.

10. A DNA molecule according to claim 9, which comprises the nucleotide sequence of SEQ ID NO:5.

11. A DNA molecule according to claim 9, which comprises the nucleotide sequence of SEQ ID NO:7.

12. A DNA molecule according to claim 9, which comprises the nucleotide sequence corresponding to nucleotides 1 to 363 of SEQ ID NO:1.

13. A DNA molecule according to claim 9, which comprises the nucleotide sequence of nucleotides 1 to 438 of SEQ ID NO:5.

14. A DNA molecule according to claim 9, which comprises the nucleotide sequence of nucleotides 364 to 630 of SEQ ID NO:1.

15. A DNA molecule according to claim 9, wherein said additional coding sequence in (xi) codes for glutathione S-transferase (GST) and is fused at the 5′ end of said nucleic acid sequence.

16. A replicable expression vehicle comprising a DNA molecule according to claim 8.

17. A prokaryotic or eukaryotic host cell transformed with the replicable expression vehicle of claim 16.

18. A process for preparing a polypeptide capable of modulating the autoimmune response of an individual to acetylcholine receptor, comprising:

(i) culturing a host cell of claim 17 under conditions promoting expression; and

(ii) isolating the expressed polypeptide.

19. A process according to claim 18, wherein the expressed polypeptide is a fused polypeptide.

20. A pharmaceutical composition, comprising a pharmaceutically acceptable carrier and the polypeptide of claim 1 or a polypeptide having the amino acid sequence of SEQ ID NO:2.

21. A method for alleviating and/or treating myasthenia gravis, comprising administering to an individual in need thereof an effective amount of a polypeptide according to claim 1 or of a polypeptide having the amino acid sequence of SEQ ID NO:2.

22. A method for diagnosing myasthenia gravis, comprising:

(i) incubating one or more polypeptides selected from the group consisting of (i) to (x) of claim 1, and a polypepetide having the amino acid sequence of SEQ ID NO:2;

(ii) determining the amount of the anti-AChR antibodies in the serum bound to said one or more polypeptides,

whereby detection of anti-AChR titers indicates the presence of myasthenia gravis.